

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Complete Listing of the Claims:

1. (Currently Amended) A fluid heating device, comprising:
a case member; and
a heating element accommodated in [[said]] the case member, wherein
a flow path ~~being formed~~ is defined between an outer surface of [[said]] the
heating element and an inner surface of [[said]] the case, wherein
~~the fluid heating device further comprises member, and further comprising a~~
turbulent flow generation mechanism ~~comprising a part that is having a part which is~~
~~configured to slide and vibrate such that vibratable to generate a turbulent flow is~~
~~generated~~ in at least a part of [[said]] the flow path.

2. (Currently Amended) The fluid heating device according to claim 1, wherein
[[said]] the turbulent flow generation mechanism is provided in a portion of the
flow path where the speed of a fluid circulated in [[said]] the flow path is reduced.

3. (Currently Amended) The fluid heating device according to claim 1, wherein
[[said]] the turbulent flow generation mechanism is provided [[on]] at a
downstream side of [[said]] the flow path.

4. (Currently Amended) The fluid heating device according to claim 1, wherein

[[said]] the turbulent flow generation mechanism is intermittently provided in
[[said]] the flow path.

5. (Currently Amended) The fluid heating device according to claim 1, wherein
[[said]] the turbulent flow generation mechanism is provided [[on]] at an
upstream side of [[said]] the flow path.

6. (Currently Amended) The fluid heating device according to claim 1, wherein
[[said]] the heating element comprises a stick shape having a circular or an
elliptical cross section.

7. (Currently Amended) The fluid heating device according to claim 6, wherein
[[said]] the turbulent flow generation mechanism comprises a spiral member wound
around an outer peripheral surface of [[said]] the heating element.

8. (Currently Amended) The fluid heating device according to claim 7, wherein
[[said]] the spiral member is composed of a spiral spring.

9. (Currently Amended) The fluid heating device according to claim 7, wherein
[[said]] the case member comprises a cylindrical fluid inlet and a cylindrical fluid
outlet that are provided parallel to the direction in which [[said]] the spiral member is
wound.

10. (Currently Amended) The fluid heating device according to claim 6, wherein
[[said]] the case member comprises a fluid inlet and a fluid outlet, and wherein
at least one of [[said]] the fluid inlet and [[said]] the fluid outlet is provided at a
position eccentric from the center axis of [[said]] the heating element such that a fluid
flows in a direction along [[the]] an outer peripheral surface of [[said]] the heating
element or flows out in the direction along the outer peripheral surface of [[said]] the
heating element.

11. (Currently Amended) The fluid heating device according to claim 1, wherein
[[said]] the heating element has a maximum calorific value of not less than in a
range of approximately 1.5 kW nor more than to approximately 2.5 kW.

12. (Currently Amended) The fluid heating device according to claim 1, wherein
[[said]] the heating element is configured so that the maximum gradient of the
temperature rise speed of a fluid is not less than approximately 10 K per second.

13. (Currently Amended) The fluid heating device according to claim 1, wherein
[[said]] the heating element comprises a sheathed heater.

14. (Currently Amended) The fluid heating device according to claim 13,
wherein [[said]] the sheathed heater has a maximum watt density of not less than in a
range of approximately 30 W/cm² nor more than to approximately 50 W/cm².

15. (Currently Amended) The fluid heating device according to claim 1, wherein
[[said]] the heating element comprises a ceramic heater.

16. (Currently Amended) The fluid heating device according to claim 1, further comprising:

a temperature detector that detects the temperature of [[said]] the heating element;
and

~~a control device controller~~ that controls the supply of power to [[said]] the heating element ~~on the basis of based on~~ the temperature detected by [[said]] the temperature detector.

17. (Currently Amended) The fluid heating device according to claim 16, further comprising:

a heat sensitive plate comprising a portion configured to come into contact with [[said]] the heating element and to project toward an outside of [[said]] the case member,
wherein

[[said]] the temperature detector ~~being is~~ provided outside [[said]] the case member and ~~detecting is~~ configured to detect the temperature of [[said]] the heating element through [[said]] the heat sensitive plate.

18. (Currently Amended) The fluid heating device according to claim 17,
wherein

[[said]] the heating element comprises a heating portion and a non-heating portion, and

[[said]] the heat sensitive plate is configured to come into contact with the non-heating portion ~~in said~~ of the heating element.

19. (Currently Amended) The fluid heating device according to claim 17, wherein

[[said]] the case member comprises [[said]] a fluid inlet and [[said]] a fluid outlet, and

[[said]] the heat sensitive plate is configured so as to come into contact with [[said]] the heating element in a vicinity of the fluid outlet ~~of said case member~~.

20. (Currently Amended) The fluid heating device according to claim 17, wherein [[said]] the heat sensitive plate is joined ~~to said~~ onto the heating element.

21. (Currently Amended) The fluid heating device according to claim 17, wherein [[said]] the heat sensitive plate is brazed to [[said]] the heating element.

22. (Previously Presented) The fluid heating device according to claim 17, wherein [[said]] the heat sensitive plate comprises a leakage preventing function ~~for preventing~~ configured to prevent leakage of a fluid within [[said]] the case member.

23. (Currently Amended) The fluid heating device according to claim 17, wherein [[said]] the heat sensitive plate is composed of a metal.

24. (Currently Amended) The fluid heating device according to claim 17, wherein [[said]] the heat sensitive plate is composed of a copper plate.

25. (Currently Amended) The fluid heating device according to claim 17, wherein [[said]] the heat sensitive plate is formed in-a having a substantially L shape.

26. (Currently Amended) The fluid heating device according to claim 1, further comprising:

a heat transfer member comprising a portion configured to come into contact with a fluid in [[said]] the flow path and to project toward the outside of [[said]] the case member, and

a heat generating electronic component provided in a portion of [[said]] the heat transfer member projecting toward [[the]] an outside of [[said]] the case member for supplying configured to supply power to [[said]] the heating element.

27. (Currently Amended) The fluid heating device according to claim 26, wherein

[[said]] the case member comprises [[said]] a fluid inlet and [[said]] a fluid outlet, and

[[said]] the heat transfer member is configured to come into contact with [[said]]
the fluid in the vicinity of the fluid inlet of ~~said case member~~.

28. (Currently Amended) The fluid heating device according to claim 26,
wherein [[said]] the heat transfer member performs a leakage preventing function for
preventing configured to prevent leakage of a fluid within [[said]] the case member.

29. (Currently Amended) The fluid heating device according to claim 26,
wherein [[said]] the heat transfer member is composed of a metal.

30. (Currently Amended) The fluid heating device according to claim 26,
wherein [[said]] the heat transfer member is composed of a copper plate.

31. (Currently Amended) The fluid heating device according to claim 26,
wherein [[said]] the heat transfer member is formed in a having a substantially L shape.

32. (Currently Amended) A fluid heating device, comprising:
a case member; and
a heating element accommodated in [[said]] the case member, wherein
a flow path being formed is defined between an outer surface of [[said]] the
heating element and an inner surface of [[said]] the case, wherein

the fluid heating device further comprises member, and further comprising a turbulent flow generation mechanism that generates turbulent flow in at least a part of [[said]] the flow path, wherein

[[said]] the case member comprises a plurality of case member parts,

[[said]] the heating element comprises a plurality of heating element parts respectively accommodated in [[said]] the plurality of case member parts,

a flow path is formed defined between an inner surface of each of the case member parts and an outer surface of each of the heating element parts, and wherein

[[said]] the turbulent flow generation mechanism further comprises a plurality of turbulent flow generation mechanism parts configured to slide and vibrate such that generate a turbulent flow is generated in at least a part of each of [[said]] the plurality of flow paths.

33. (Currently Amended) The fluid heating device according to claim 32, wherein

each of the plurality of case member parts comprises a fluid inlet and a fluid outlet, and

the fluid outlet of one of the case member parts is formed such that it can be configured to be fitted in the fluid inlet of the other another case member part.

34. (Currently Amended) The fluid heating device according to claim 32, wherein

each of the plurality of case member parts comprises a fluid inlet and a fluid outlet, the fluid heating device further comprising:

a connection member connector configured to connect the fluid outlet of one of [[said]] the case member parts to the fluid inlet of an other another of [[said]] the case member part.

35. (Currently Amended) The fluid heating device according to claim 32, wherein [[said]] the plurality of case member parts have the same shape.

36. (Currently Amended) A washing apparatus that sprays a fluid supplied from a water supply source to a portion to be washed of the human body, comprising:

a fluid heating device that heats the fluid supplied from [[said]] the water supply source while causing the fluid to flow; and

a spray device a sprayer that sprays the fluid heated by [[said]] the fluid heating device to [[said]] the human body,

[[said]] the fluid heating device comprising:

a case member, and

a heating element accommodated in [[said]] the case member,

a flow path being formed defined between an outer surface of [[said]] the heating element and an inner surface of [[said]] the case, wherein

the fluid heating device further comprises member, and further comprising a turbulent flow generation mechanism comprising a part that is configured to slide and

vibrate such that vibratable to generate a turbulent flow is generated in at least a part of [[said]] the flow path.

37. (Currently Amended) A washing apparatus that washes clothes using a fluid supplied from a water supply source, comprising:

a washing tub;

a fluid heating device that heats the fluid supplied from [[said]] the water supply source while causing the fluid to flow; and

a supply device supplier that supplies to the washing tub the fluid heated by [[said]] the fluid heating device to the washing tub heating device,

[[said]] the fluid heating device comprising:

a case member, and

a heating element accommodated in [[said]] the case member,

a flow path being formed defined between an outer surface of [[said]] the heating element and an inner surface of [[said]] the case, wherein

the fluid heating device further comprises member, and further comprising a turbulent flow generation mechanism comprising a part that is vibratable to generate configured to slide and vibrate such that a turbulent flow is generated in at least a part of [[said]] the flow path.

38. (New) The fluid heating device according to claim 1, wherein the turbulent flow generation mechanism has a free end and a fixed end, and wherein the fixed end is connected to the heating element.

39. (New) The fluid heating device according to claim 32, wherein the turbulent flow generation mechanism has a free end and a fixed end, and wherein the fixed end is connected to the heating element.

40. (New) The fluid heating device according to claim 36, wherein the turbulent flow generation mechanism has a free end and a fixed end, and wherein the fixed end is connected to the heating element.

41. (New) The fluid heating device according to claim 37, wherein the turbulent flow generation mechanism has a free end and a fixed end, and wherein the fixed end is connected to the heating element.